DIRECT
Operational Field Test Evaluation
Institutional Issues

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Prepared by:
University of Michigan
EECS Department
ITS Research Laboratory

Rebecca Richeson
Steven Underwood

200 Engineering Programs Building
2609 Draper Drive
Ann Arbor, MI 48109-2101
Phone: (734) 764-4333
FAX: (734) 763-1674

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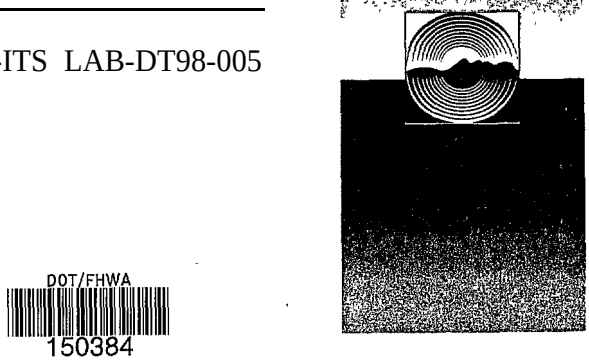

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ABSTRACT

Institutional issues have been defined as non-technical issues or concerns that influence the course and outcome of an operational test. Often they are events and/or circumstances that affect administration, design, deployment and evaluation of the operational test. More accurately, this report identifies themes expressed by the people directly involved in the project. Many of these themes originate from reports of problems encountered and addressed by the respondents during the course of their own involvement in DIRECT.

The mandate for a formal recording of institutional issues can be traced back to its enabling legislation. In response to the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the United States Department of Transportation developed the Institutional and Non-Technical Issues Program of Intelligent Transportation Systems (ITS). Federal officials designed this program around the following goals: (1) to identify and research the non-technical events/issues/concerns that aid or hinder the deployment of ITS products or services, (2) to develop a comprehensive set of issues and recommendations for future deployments of ITS technologies, (3) to understand the institutional issues associated with a field operational test, and make recommendations to others involved in similar tests for overcoming such barriers, and finally (4) to help document a chronological history of the project and its purpose for posterity.

As part of the project evaluation, this study documents the non-technical events that occurred during the DIRECT project. Members of the evaluation team interviewed a subset of project participants. A total of 23 interviews were conducted between May 1995 and July 1998. The interviews were broken into two phases. During the first phase, respondents focused on the issues that they had encountered during the planning and implementation of the DIRECT project. The second phase of interviews addressed means early for overcoming the early issues and recommendations for the future of the project. Future implementation recommendations are presented in a separate report (See Document EECS-ITS LAB-DT98-001 Part 4).

The respondents represent federal and state governments, private industries, and consultants and contractors to the project. The subjects' involvement in DIRECT include various aspects of the project from policy making and program management to administrative, financial and technical support. Evaluators selected a group of respondents to provide an accurate representation of the public and private organizations involved in the project. This diverse group of individuals provided their views, opinions, and criticisms of the DIRECT project.

INTRODUCTION

The purpose of an institutional issues evaluation is to critically review the non-technical factors that influenced the deployment and operation of the DIRECT systems, and to observe lessons from the experiences of the individuals responsible for making it happen. The central question was, "if you had an opportunity to be involved in a project like DIRECT again, what lessons from the DIRECT experience would you draw upon to assure that things went as well, or better, the next time around?'

The documentation and evaluation of these types of issues can provide a benefit for future ITS implementations. An institutional issues evaluation can provide a guide for future deployments by presenting the issues that project participants encountered throughout the DIRECT project, and their recommendations for resolving those issues.

Twenty-three interviews were conducted between May 1995 and July 1998. The interviews were broken into two phases. During the first phase, respondents focused on the issues that they had encountered during the planning and implementation of the DIRECT project. The second phase of interviews addressed means early for overcoming the early issues and recommendations for the future of the project. Future implementation recommendations are presented in a separate report (See Document EECS-ITS LAB-DT98-001 Part 4).

Several questions served as the focus for much of the discussion on institutional issues:

Phase I

A. Issues Encountered and Lessons Learned

A1. What institutional impediments were encountered in establishing partnerships and deploying ITS services and products during DIRECT?
A2. Where in the life cycle of the project did these impediments occur?
A3. What are the causes of these impediments and how were they overcome?
A4. What lessons were learned in dealing with these impediments that can be applied to other deployments of ITS products and services?

Phase II

B . Future of DIRECT in Light of Lessons Learned

Bl. The DIRECT operational field test will conclude at the end of this summer. What should MDOT do now in light of DIRECT?
B2. Where should MDOT's ATIS deployment efforts go from here?
B3. Why do you suggest this direction?
B4. Will the lessons learned from DIRECT help with this course?
B5. What are the issues facing your organization regarding further deployment of ATIS?
B6. What/who are the most important forces that will influence the further deployment of public ATIS?

C . Future of ATIS in Michigan

C1. What type of traffic information should be provided?
C2. Who should collect traffic information?
C3. Who should provide traffic information?
C4. Who should pay for traffic information?
C5. How can ATIS become a business?

Keys Issues & Evaluation Objectives

Many important issues investigated during the development and execution of the DIRECT project required a qualitative rather than a quantitative research approach. These issues were institutional barriers and facilitators to the implementation of the DIRECT operational field test (OFT) and its technologies.

Experimental and quasi-experimental strategies for these types of studies are limited in that they tend to neglect relevant qualitative contextual evidence and often depend upon a few quantified abstractions, to the neglect of contradictory and supplementary qualitative evidence (Weiss & Rein, 1970). It is in this area of contextual evidence that institutional issues fall; and it is precisely why institutional issues research is included in the evaluation plan. Each other research area focuses on the technology itself, i.e. cost, effect on user, or ability to simulate. However, the institutional issues component (1) examines the institutional issues surrounding deployment of the DIRECT technologies and (2) explores the process itself of implementing an operational field test. Both research thrusts are important because no matter how revolutionary a technology may be, it cannot be widely deployed without an understanding of both the institutional barriers and facilitators. In addition, because of the number of ITS deployments around the country, it is worthwhile to generate lessons and guidelines for such efforts. Therefore, in conjunction with the quantitative research methods an effort was made to capture these qualitative issues.

The objective of this institutional issues research was both to complement and supplement the control-based research designs with rich descriptive and analytical data. This data covers those aspects of DIRECT on which quantitative methods are mute – system implementation, possible system side effects, and possible causal processes that produce the observed outcomes (Campbell, 1970; 1979). The research was aimed to determine which factors affected the project that the other experiments did not report, and the institutional arrangements that helped or hindered the efforts of the development and implementation teams. These concepts were addressed through regular contact with project participants throughout the course of DIRECT. The research approach was more flexible and dynamic than more controlled quantitative approaches and provided a view of events in the context of people's overall experiences.

METHODOLOGY

The goals of the Institutional Issues Study were (1) to report and assess the institutional and organizational issues associated with deployment of the DIRECT OFT, (2) to identify qualitative factors that may confound OFTs, and (3) to discover lessons learned and make recommendations for future OFT efforts.

The Volpe Monitoring Program Framework provided the initial structure for the evaluation of DIRECT institutional issues. Through a series of 23 personal interviews with project

participants, evaluators gathered data for analysis. Interviews took place in two phases between May 1995 and July 1998. The first phase addressed those issues encountered during the design and deployment of the DIRECT technologies. The second phase focused on the lessons learned based upon the participants' experiences and the future in light of those lessons. The evaluation team selected interviewees based upon their level of involvement in and responsibility for the DIRECT project.

The primary method of data collection was personal interviews of individuals significantly involved in the project. Personal interviewing has been a major component in similar efforts to date, where a structured protocol was used. In an effort to complement the institutional issues research already accomplished, the approach retained some of the same elements. However, this study differed in that no hypotheses were formulated before data collection-interviewees themselves generated the issues. Brainstorming a list of potential issues prior to speaking with the participants could have biased interviews towards those issues. In fact, interviews that focused on pre-fabricated issues could have produced unwanted results. For example, they could have focused the interview on the researcher's issues, which may or may not be the most important issues to the interviewee. The result could have been inaccurate data because it would not have accurately reflected the interviewees' assessments of the process. Similarly, interviewees may have felt constrained by the established issues and felt an obligation to discuss them. Therefore, rather than use a structured interview guide with pre-established issues, the interview guide was designed to elicit the issues from each interviewee.

The first step was to select participants. Because of the history of the project, it was useful to select people who had been involved from the very beginning, as well as people who had joined the project team throughout the course of DIRECT. Of the individuals selected, all were interviewed at least once. These were either a personal interview or telephone interview which may have been tape-recorded. This interview focused on the general history of the project, including important events and milestones and the impact that they had on the project. In addition, interviewees were asked about issues they felt were obstacles to the process as well as those that facilitated the process. Participants were also asked their reasons for involvement, their roles (and if they have changed), their fears and predictions, and how they hope to benefit from participation in the project. The idea was to use the data collected throughout the project life cycle to construct plausible causal explanations of the events.

The continuous monitoring effort encompassed periodic communications with different people involved on the project throughout the project until its end. The purpose of this effort was to intensively study the project status and environmental interactions that took place among the organizations and other actors affiliated with the DIRECT project. The continuous monitoring effort examined the issues involved in implementing a project with the unique characteristics of an OFT.

INSTITUTIONAL ISSUES

Partnerships

The DlRECT project involved negotiations with a number of potential project partners and vendors although, in some cases, these negotiations did not result in a project contract.

Partners	Vendors
Federal Highway Administration	Capstone Consulting
Michigan Department of Transportation	Delco Electronics
University of Michigan	ERIM
AAA Michigan	Hughes
Ameritech	MetroNetworks
Ericsson/GE	PacTel
Ford Motor Company	WDTR
General Motors Corporation	
Chrysler Corporation	

Many participants were satisfied with the project relationships that they had formed during DIRECT. Interviewees cited several sources for the formation of these positive partnerships including:

- open lines of communication between all parties
- effective coordination among the various partners/vendors
- support from within the respective organizations involved in DIRECT
- cooperation by the partners/vendors
- commitment, dedication and desire to make the project work
- mutual respect for all partners/vendors
- effective decision-making processes

One interviewee noted that a successful team is one in which every participant works as hard for others as he would expect others to work for himself. The MDOT staff, in particular, was applauded for the amount of energy that they put into the project. “They were willing to do whatever it took to get the project going.”

Not all parties involved in the DIRECT project were mutually satisfied with their partnership arrangements. These troubles date back to the early stages of the project during the design phase. In this case, the cost of the product or service that was offered was too high given the limitations of the project budget. MDOT and FHWA officials note that these partnership difficulties were due to a lack of true understanding about the limited budget for the project. Interviewees made additional suggestions on why these partnerships did not succeed as the others had: 1) lack of commitment and follow through, 2) lack of teamwork, and 3) lack of communication with MDOT. For future design contracts on other projects, MDOT has required that the contractor have at least one person working on the project in a local office. In the end for DIRECT, a relatively large portion of the total project funds was expended on developing a system design that was beyond the means of the project. Unable to reach consensus, MDOT discontinued the design contracts thus giving its own staff the task of modifying the system design to conform to the remaining budget.

Unfortunately, not all of the partner/vendor negotiations with MDOT produced project contracts. Interviewees expressed disappointment that some of the partnerships, particularly those with the automotive companies, failed to materialize. In some cases, the equipment being considered from a private company for DIRECT did not have the necessary capabilities for the DIRECT project. In addition, the automotive companies were not as active and participatory as MDOT would have liked. Although they were active members of the DIRECT Executive Committee in the early stages, the automotive companies lost interest in the project as delays occurred in the design phases. As a result, they withdrew from the project leaving MDOT with the responsibility of procuring vehicles

for the project. Although some interviewees thought that these losses could have had a serious impact on the project, they noted that the experiences have turned out positively in the end. In addition, the automotive companies have exhibited renewed interest in DIRECT as potential scenarios are considered for the continuation of DIRECT.

Overall, the participants in the DIRECT project have experienced varying levels of satisfaction with their involvement. However the partnership difficulties faced by MDOT early in the project were successfully overcome. Interviewees note that the underlying problem of previous partnership issues was the large number of partners/vendors with a relatively small project budget. It is not a trivial task to coordinate so many players in a $5 million project. "I have to give the project, all partners, a lot of credit for making it work – towards the goals and objectives – within a restricted budget." MDOT was given the difficult task of coordinating all efforts on the DIRECT project and balance that against all of its other obligations. MDOT staff had to take the withdrawal or loss of partners/vendors in stride, assume more responsibility than originally planned, remain within budget, coordinate the efforts of the partners/vendors, and coordinate its own staff efforts spread across several divisions.

Despite the large number of project participants, interviewees thought that the DIRECT team was a good one. They also noted that it is not unusual for each participating party to have different goals for the project, and that these goals and interests are not necessarily in conflict with each other. While there may have been some institutional issues related to project partnerships in DIRECT, they were not overwhelming barriers to the success of the project.

Participants cited many keys to their success in overcoming potential institutional barriers to forming positive partnerships for DIRECT: cooperative thinking among the team members, hard work, open-mindedness, desire to get something out of the project, patience, willingness to take on potentially unexpected responsibilities, dedication, communication, and teamwork. Perhaps that most appropriate summary comment is, "Never say die!" One important lesson to learn is that if a project team is dedicated, they will find a way to make it work.

DIRECT Planning

Planning is perhaps the single most crucial factor in project development. Interviewees agreed that thorough and effective planning is the key to avoiding many technical difficulties in the various stages of a project. One participant stated that the conception stage is the vital step in a project. It is necessary to "concentrate on planning and foresight." A well-conceived initial proposal lends itself to better planning and preparation for deployment, thus reducing the risks of incompatibility and unforeseen technical difficulties. In fact, participants noted that the project plan and budget should allow for a planning stage. Typically, planning efforts are not built into the project plan thereby leaving a gap between the initial proposal and actual system design and implementation. Project planning enables more efficient uses of staff time and the budget as the project progresses. Planning should produce a substantive, specific and thorough concept of the ensuing project. Interestingly, the recent efforts to mainstream ITS in the new federal transportation legislation, TEA-2 1, planning is required for all new ITS projects.

Timeline

Early during the course of DIRECT, participants were frustrated by the pace of the project. Recurrent delays in the progress of the project solicited criticism from interviewees. In

1995, some interviewees stated that they thought that the FHWA would soon cancel the entire project. However their fears never materialized and once the system design issues were settled and the direction of the project was made clear, the project proceeded at a reasonable rate.

Unfortunately, the automotive companies lost their enthusiasm for the project as it floundered during the first phase, and did not loan a total of 30 vehicles to the project as planned. One representative said that his company was withdrawing from the project because the technologies being tested became outdated during the design phase. But MDOT was able to compensate for this loss by leasing vehicles for the purposes of the experiment. The loss of other project partners/vendors, and the ensuing work load taken on by MDOT, created time pressures on the internal staff that might not have otherwise existed.

Interviewees offered potential solutions to overcoming the delays encountered during the design phase of the DIRECT project. One underlying in this case could be the role and authority assigned to the technical advisor for the system design and that retained by MDOT. (See Section on Role of the DOT.) Some participants felt that if the contractor had been allowed to provide a "turnkey" solution to the State, then the project schedule could have been maintained. In addition, the contractor had no funding to buy hardware, only provide the labor thus resulting in delays due to the State process of procurement.

Participants suggested several keys for all project team members to keep in mind to maintain the progress of a project:

- timely resolution of broad technical issues
- communicate with all parties involved
- plan and organize the project before implementing

Delays in the timing of any phase of a project are usually attributable to one or more underlying issues or factors, and the DIRECT project is no exception. As previously noted, the technical advisor to MDOT was given responsibility to design the system, but no authority to make final decisions on the actual implementation. Another interviewee offered that this project, like most projects, suffered from unrealistically optimistic schedules. However it is hard to judge the accuracy of this suggestion given the unexpected problems encountered in the early stages of the project.

The most commonly cited reason for delays in the project was the length of time required to resolve issues and make decisions. One representative of a private company indicated that trying to make decisions through committee resolution was the source of delays. Others noted that unless agreements are put in writing, they may not come to fruition when it comes time to sign a contract.

MDOT officials cited governmental institutions as an explanation for the delays. MDOT is associated with the Department of Management and Budget, a state approved program, and contracts have to go through them before they can be passed by MDOT. In addition to contractual delays, government institutions do not necessarily encourage rapid decision making. "In State government, things do not move as fast as people would like them to go. There are all kinds of rules, regulations, policies, guidelines, etc. and different people working together. Institutionally, it is very difficult to coordinate all of these things."

Funding & Contracts

In 199 1, the Intelligent Transportation Systems Program was still new so the process of federal authorization of funds was relatively slow. This process may have been the source of some of the early delays in the DIRECT project. Although the cost of the project was low in terms of the federal budget, the risk encountered during the design phase was that the project would not happen. However, as previously described, MDOT handled these early difficulties by assuming more responsibilities to cover the gaps, and successfully completed the project within the specified budget.

Nevertheless, one of the biggest underlying problems with the DIRECT project was its limited budget - $5 million. This budgetary constraint created pressures on the project in terms of general partner relationships, and more specifically, it exerted pressure on partner/vendor contracts. The project team had lofty goals for DIRECT, but had to temper their expectations based upon the budgetary restraints.

The delays and partnership difficulties encountered during the design phase of DIRECT are directly attributable to budgetary and contracting concerns. MDOT contracted with a private organization to design the DIRECT system. Given the large number of parties involved in the early stages of DIRECT, there were also a large number of ideas about what should be tested in the project. "It's hard to blame the system design contractor because they were listening to all of the project partners and trying to keep them happy." In addition. MDOT and F'HWA officials cite that there may not have been a realistic understanding of the price control for the design and implementation of the system. "It was a wonderful proposal that was wonderfully over budget." The partners could not agree on which elements to cut or reduce from the design, and it became clear the project could not reach the lofty goals established by that particular design.

MDOT later issued a contract to new project partner for technical advice on the system design. This contractor faced funding issues of a different nature. Due to delays in working with the Department of Management and Budget, the contract took longer than expected to execute. Based upon a verbal commitment, the contractor began work on the system design - but the actual contract was not yet authorized. Unfortunately, MDOT contracting procedures do not allow payment for work done before the contract start date. Therefore the contractor was not compensated for time and effort on the project up to that point. Given this experience, the contractor refused to continue work on the project until the contract was signed. The contract took almost a year to execute, thus creating a rather lengthy delay in the course of the project. Again, MDOT was not satisfied with the final product. However the technical advisory team claims that assessment of their performance was inaccurate in that their role was to provide advice, but they had no authority to see that their advice was carried out.

Given the proportion of the budget that was spent on the system design, the remaining parts of the project had to become even more cost efficient. After several years of trying to develop a system design that was acceptable to all parties and that fit into the budgetary constraints, MDOT and the DIRECT partners/vendors then faced the responsibility of integrating, implementing, managing, testing, and evaluating the system. MDOT staff had to assume more responsibility for the project than anticipated as various partners/vendors did not continue on the project. MDOT staff from various Divisions were recruited to help on the project in addition to maintaining their existing obligations. As a result, MDOT had to fill the missing roles for the project will their own staff from different parts of the Department.

Role of the State Department of Transportation

MDOT, as the Program Manager for DIRECT, was responsible for aspects of the project - planning, design, integration, implementation, and evaluation. Although MDOT was the prime contractor, they brought several other subcontracting organizations on to the DIRECT team as partners or vendors.

As the manager of the overall project and coordinator of all parties, one of MDOT's most important functions was to gather and disseminate information. Project participants like to be informed about the progress of the entire project regardless of their particular role. Project partners would like to receive periodic updates or newsletters summarizing recent project activities, such as the bulletins distributed by the Road Commission for Oakland County about the FAST-TRAC project in Southeast Michigan. In addition, some interviewees would have liked more feedback from the State after submitting technical reports or recommendations. One team member suggested that all project members should have the authority to disseminate their reports/recommendations directly to other team members rather than relying upon the State for this task. However the team members recognize that their contracts require that the State first review and approve documents before they can be distributed. In general, interviewees agreed that the State, as the Program Management Organization, must provide regular feedback to the project subcontractors and maintain open lines of communication with all parties involved.

For the DIRECT project, MDOT also maintained systems integration responsibilities rather than hiring a contractor for these services. MDOT officials and other participants noted the State is not really organized, institutionally, to act as a systems integrator. Early in the project, it was difficult for MDOT to make things happen. Although the State may have the resources to do a project, "we have to push a little at a time, like pushing a big rock." The result was that the early stages of the project moved more slowly than some would have liked. "The State government is not set up to do all of that quickly or easily. Development of agreements, contracts, procurement, installation - all of this is difficult to do and the structure cannot be easily changed." For a future project, MDOT decided to contract the systems integration task and have a contractor turnkey the whole project.

Procurement difficulties were of particular interest to some interviewees. For the State, procurement of equipment is a particular problem. During the design stages, the technical advisor had no funding or authority to procure equipment based upon their recommendations. Representatives of this vendor felt that the separation of design from procurement created difficulties and delays for the DIRECT project. However MDOT officials felt that the contractors tended to purchase equipment that was too expensive given the tight budgetary constraints for the project, and private contractors tend to purchase equipment from sole source vendors. Typically, the State operates by competitive bidding, and sole source vendors for equipment are an "administrative headache."

The overarching issue is the number and types of roles assumed by the State for the project. MDOT chose to develop the project itself rather than contract it out. Interviewees acknowledged that each participant has a different role. In order to draw upon the strengths of all partners, each party should focus on its particular role and area of expertise. However some participants sensed a feeling a rivalry from some MDOT staff, and believed that they perceived outside contractors as a threat. Perhaps the explanation is not a lack of trust of contractors, but rather that the internal staff wanted to be more involved in the project. One participant stated that there is a State government perception that "someone from the outside is better suited to do things than someone from the inside." By becoming more involved in DIRECT, MDOT staff felt a greater sense of pride and accomplishment. Although it may

not always be possible, MDOT staff like to be more intimately involved in the projects. "Contracting out should be looked at as an economic choice and not a political choice." If the State lacks the necessary technical expertise, then they should contract out. If not. like in the equipment procurement process, they should consider the most economic option while drawing upon the experiences and expertise of other organizations. Although MDOT's assumption of greater responsibility may have created some early difficulties for DIRECT, the staff has a great sense of pride in the final product.

Leadership & Decision-Making

In their 01/18/94 Revised Implementation Plan: Phase II, MDOT decided to appoint a Project Engineer to DIRECT. The Project Engineer was designated as the "single point of contact responsible for project cost, schedule and technical performance."

MDOT retiree, Dick Blost, was appointed as the Project Engineer for DIRECT. Participants applauded his efforts on the project. In particular, they credit him with moving the project forward when it seemed to be stalling in the design phase. Interviewees admired his management style noting that he engaged team members in discussions before making decisions. In addition, they felt that he adequately kept the project parties informed of decisions and progress.

Respondents also reflected upon the management difficulties that were encountered during the early years of the project. Interviewees attributed some of the project delays to management turnover. Management for DIRECT changed five times during the course of the project. One respondent stated that during times of personnel changes, especially at the management level, there is always a bit of a "leadership vacuum." This turnover was based upon a variety of factors: promotions, retirement, and general attrition. Participants felt that one manager throughout the project life cycle would have been beneficial, particularly during the early phases of the project. Participants also noted that project delays could have been related to the structure of government bureaucracy itself which does not necessarily allow for quick decision-making. One official noted that the MDOT "command structure is a little indistinct." Interviewees stated a preference for assertive and aggressive leadership, quick decision-making, and daily contact with the project. The suggestion was that a Project Manager who is solely dedicated to the project throughout its duration would be the optimal solution. Given the restricted budget, dedicated project staff seemed unfeasible. MDOT staff who were involved in the project had other contracts, deadlines, reports, meetings, etc. to maintain. In addition, the staff was spread through a number of Divisions and Sections at MDOT thus diffusing responsibility and accountability.

The number of project team members was a recurring theme. In addition to the number of partners and vendors, there were a number of different sections involved within MDOT. "This is not the biggest project that I have worked with, but it includes the largest amount of different types of people." This large team created a difficult managerial task for MDOT since all project partners were part of the Executive Committee. With so many players involved, it was not always easy to come to a resolution. Interviewees expressed admiration for the difficult task that MDOT tackled. "I don't know how the State operates between all of these groups and how they coordinate." Despite the large number of parties involved in the DIRECT project, interviewees sensed a feeling a teamwork and cooperation, and felt that there were few conflicts among the various team members.

Although the interviewees had managerial concerns early in the project, these concerns subsided as the project moved beyond the design phase and the period of management turnover. Participants mentioned several keys that were necessary for the success of this

management team, as well as for any manager or management team: decisions should be made based upon the required technical knowledge, the person responsible for the day-to-day operations should be a key element of the decision-making process, keep the lines of communication open, develop solutions quickly, maintain regular contact with the project and the team members, conduct and attend regular project meetings. The University of Michigan team, and Dr. Marlin Ristenbatt in particular, played an important role in assisting MDOT with the system design and the technical performance. In essence. a project team admires strong leadership and quick, effective decision-making from the Project Manager and the management organization.

Federal and State Support for ATIS

Both state and federal officials indicated that there is a lot of institutional support for Advanced Traveler Information Systems (ATIS). At the federal level, there were a number of individuals who were quite enthusiastic about ATIS, especially during the early years of the DIRECT project. FHWA retiree Martin Monohan was noted for his support of ATIS and the DIRECT project. In fact, he is credited with garnering and maintaining federal support for DIRECT. Also, the State of Michigan was applauded for its efforts. "The fact that Michigan is so involved in Intelligent Transportation Systems (ITS) is the most important thing. When the FHWA sees enthusiasm and commitment to ITS, it is easy to get support." However in recent times, there has not been a champion for ATIS at the federal level. So there have not been as many direct lines of communication between the Washington, D.C. office and the Regional office regarding ATIS programs. But FHWA has remained committed to the successful completion of the DIRECT project.

At the state level, there is continued support for ATIS programs. The major issue concerning the future of ATIS is not institutional support - it's the availability and funding. It is clear that there has been and will continue to be state support for ATIS. But at this time, the direction of MDOT's ATIS deployment efforts is unknown. MDOT's traditional roles are those of designing, building, and maintaining the transportation infrastructure. ATIS falls under MDOT Operations, and MDOT is only now starting to become involved in this arena. Although the State will be receiving an additional $309 million in federal road funding in 1998, this increase will be dedicated to road maintenance, as demanded by the public. There is a more urgent need for road maintenance in Michigan right now. In fact, Governor Engler has emphasized construction and maintenance in his Build Michigan Plans. "Even though ATIS is less expensive than road maintenance, it is still an expense that could be used for some of the deteriorated infrastructure." Therefore ATIS will have to compete with construction and maintenance projects in the State of Michigan. Although the support and desire to deploy ATIS exists within MDOT, there are different issues that are of higher priority for funding right now. As a part of the efforts to mainstream ITS, the benefits of ATIS will have to be demonstrated in order to compete with traditional transportation improvements. Perhaps the results of ATIS tests, like DIRECT, that are drawing to a close are going to take on even more importance in the transportation arena in the near future.

ATIS - A Public or Private Industry?

Participants raised a key issue relevant to any project: what do you do when the project comes to an end? Since the DIRECT project was a comparison of different methods for delivering traffic information to travelers while in their vehicles, and a study of what types of information drivers want, participants were particularly interested in how traveler information systems could become an industry beyond the DIRECT test.

The State has and will continue to provide information on certain corridors to the public at no cost as long as there is funding to support such efforts. However current demands on funding at MDOT restrict the amount of State funding that could be spent on ATIS. In addition, it is not necessarily the role of the DOT to provide information to the private user.

The public sector has a tremendous amount of traffic information in its possession. “They know where construction is going on, possible congestion information, where incidents can or have happened.” The primary issue is how to get this information to the public to help manage freeway traffic. Also, given the amount of data in the possession of the public sector, industry must address the question of how to bundle this information and disseminate it to the private user for value-added resale.

Interviewees unanimously agreed that advanced traveler information systems (ATIS) can be neither an exclusively public not private business - it must be a public-private partnership.

As construction of the interstate system draws to a close, the objective of the State will shift from building infrastructure to using its existing capacity in an optimal fashion. But it is the commercial sector, and not necessarily the public sector, that has the resources and incentive to distribute traffic information to the end user. Therefore, the State should make efforts to get its data out to the private sector. The commercial sector can provide traffic information to the private user in an economically-viable fashion. But State DOTS should facilitate the collection of traffic data because it is their infrastructure that is being used. Furthermore, this information can help MDOT manage traffic around construction, incidents and other problem areas. Perhaps the State should play a role in establishing protocols for how their data should be used and presented so that it is not misinterpreted.

The public sector has the infrastructure and the private sector has the resources and product development for reaching the end user. A public-private partnership seems to be the optimal business solution for ATIS. With such a partnership, “the benefit is that everyone has a different piece of the pie.” By pooling the resources of both sectors, there is a chance to create a business that meets the needs of both. A public-private partnership for ATIS could be a win-win-win situation: the private sector can make a profit, the public and private user has access to the traffic information that they desire, and the public sector is able to provide mobility and more efficient use of the transportation system while possibly sharing the revenues gained through this partnership. Participants agreed that any DOT efforts to move in the direction of a public-private partnership for ATIS would be beneficial for all parties involved.

CONCLUSIONS

Participants in the DIRECT Institutional Issues Study raised a series of issues regarding their experiences in the project. These issues included not only those factors which facilitated or hindered the design and deployment of the DIRECT project, but also those factors which could influence the future of traveler information as an industry. The issues can be summarized in a number of statements:

- The keys to forming positive partnerships include: open lines of communication between all parties, effective coordination among the various partners/vendors. support from within the respective organizations involved in DIRECT, cooperation by the partners/vendors; commitment, dedication and desire to make the project work; and mutual respect for all partners/vendors and effective decision-making processes.
- The keys to overcoming difficulties encountered in forming partnerships were: cooperative thinking among the team members, hard work, open-mindedness, desire to get something out of the project, patience, willingness to take on potentially unexpected responsibilities, dedication, communication, and teamwork.
- The budgetary constraints of the project should be made clear to all parties involved.
- Contractors for a project should maintain a local presence for easy and effective communication and coordination.
- The withdrawal of the automotive companies from the project was a disappointment to the team.
- Management and coordination of a large number of team members was difficult given the limited project budget.
- The system design phase of the project moved more slowly than planned.
- Contracts issued through the Michigan Department of Transportation took longer to execute than expected due to MDOT contracting processes.
- Institutionally, the State is not necessarily organized to act as a systems integrator.
- Personnel turnover at the management level can result in a temporary leadership vacuum.
- A champion at the State and Federal level is necessary to garner support for ATIS programs.
- Given the current emphasis by the Governor in the State of Michigan and the new TEA-21 legislation, ATIS projects will have to compete with maintenance and construction projects for funding.
- By pooling the resources of the public and private sectors, ATIS can become a business and produce a win-win situation.

The DIRECT project could serve as a valuable foundation for future ATIS endeavors. Interviewees unanimously supported the concept of a public-private partnership for developing ATIS into an economically-viable industry. In addition, such a partnership could prove to be rewarding for all parties involved.

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